



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/605,201	06/27/2000	David Black	E0295/7146	4782

7590

03/14/2003

Matthew B Lowrie
c/o Wolf Greenfield & Sacks PC
600 Atlantic Avenue
Boston, MA 02210-2211

EXAMINER

PEYTON, TAMMARA R

ART UNIT

PAPER NUMBER

2182

DATE MAILED: 03/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/605,201

Applicant(s)

BLACK, DAVID

Examiner

Tammara R Peyton

Art Unit

2182

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 7 is objected to because of the following informalities: the acronym ELVID should be defined at least one in the first instance in order to clarify the claim language in subsequent instances . Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Applicant's Admittance of Prior Art (AAPA)* and *McBrearty et al.*, (US 6,216,211).

3. As per claims 1, 6, and 8, *AAPA* discloses a method of moving a logical entity, wherein the logical entity being capable of being accessed by a plurality of host computers without having to freeze access to the logical entity. (Specification pg. 39, lines 9-19) What is needed is a method that when a copy of the logical entity is created, there if no fear of updates being made to the logical entity at the old location that would

Art Unit: 2182

not be reflected wherein the copy is being created. *McBrearty* teaches a method of moving a logical entity (volume) from a first (backup/primary) storage element to a second (mirror backup) storage element, comprising:

- creating a copy of the logical entity on the second storage element (create an entry point to starting copying from the first storage element) ;
- moving all reads of the logical entity from each of the first storage elements to the second storage element; and (based on an entry point, col. 2, lines 54-60)
- after the step of moving all reads, moving all writes to the logical entity to the second storage element.

4. *McBrearty* teaches a method of creating a copy of a logical entity and moving all reads of the logical entity from a backup/primary storage element to a mirror backup storage element. During the read operation, write operations are being mirrored to the mirror backup storage element. Those write block operations are marked stale, during the copying of the read operations. When the read operations are completed, the entry point thereto is deleted and the write block operations that were marked stale on the mirror backup storage are then resynchronized, i.e. updated. *McBrearty* teaches of updating write operations to the mirror backup storage only after all the read operations are completed. (Abstract, col. 5, lines 47-67, col. 6, lines 32-46)

Art Unit: 2182

5. It would have been obvious to one of ordinary skill to combine *McBrearty's* method of first moving all reads operations and then moving all updated write operation the second storage element with the prior art system. Doing so would allow data to be independently manipulated without causing interference with production processing thereby reducing the system resources required to backup and restore original data.

6. As per claim 16, *AAPA* in combination with *McBrearty* teaches a host comprising:

- a processing unit (Fig.1) ; and
- a memory interface module (Logical Volume Memory, 30, Fig. 1, 2) to permit accesses to a logical entity to be made to one physical storage location for read request and to a different physical storage location for a write request.

7. As per claim 20, *AAPA* in combination with *McBrearty* teaches a storage management controller for computer storage system that includes a plurality of storage elements, the storage management controller comprising:

- an interface module (Logical Volume Memory, 30, Fig. 1, 2) to communicate with the storage elements; and
- an entity movement manager (Logical Volume Memory, 30, Fig. 1, 2) to control separate moving of a read location and a write location for a specified logical entity.

Art Unit: 2182

8. As per claims 23, 24, and 26, *AAPA* in combination with *McBrearty* teaches a computer system, comprising:

- a plurality of host computers;
- a plurality of storage elements; and
- means for separately moving reads for a logical entity and writes for the logical entity from a first physical storage location on one of the storage elements to a second physical storage location on a different one of the storage elements.

9. As per claim 2, *AAPA* in combination with *McBrearty* teaches wherein creating comprises a step of establishing a mirror of the logical entity.

10. As per claim 3, *AAPA* in combination with *McBrearty* teaches of maintaining the mirror during the step of moving all reads.

11. As per claim 4, *AAPA* in combination with *McBrearty* teaches of during the step of moving all reads, passing all writes made to the logical entity at the first storage element to the copy on the second storage element.

12. As per claim 5, *AAPA* in combination with *McBrearty* teaches of during the step of moving all writes, passing all writes made to the logical entity at the first storage element to the copy on the second storage element.

13. As per claims 7, 12, and 21, *McBrearty* teaches of assigning an ID (minor number) for the logical volume. (*McBrearty*, col. 5, lines 10-14)

14. As per claims 9, 10, 27, and 28, *AAPA* teaches wherein the logical could be a hyper-volume or striped volume.

15. As per claims 11 and 29, *McBrearty* teaches wherein the logical entity is a partition.

16. As per claims 12 and 13, *McBrearty* teaches of translating the logical address to a physical address based on an ID assigned to each logical entity. It would have been obvious to one of ordinary skill that doing the moving of all reads and writes the translations are updated in order to preserve consistency. (*McBrearty*, col. 5, lines 30-38)

17. As per claim 15, *AAPA* in combination with *McBrearty* teaches a step of using a storage management controller to manage movement of the logical entity.

18. As per claims 17, 18, and 19, *McBrearty* teaches of a Logical Volume Memory (30, Fig. 1, 2) that is responsible for translating the logical address to a physical address based on an ID assigned to each logical entity. (*McBrearty*, col. 5, lines 30-38)

19 As per claim 22, neither *AAPA* nor *McBrearty* teach wherein logical entity IDs is stored in a database. *McBrearty* teaches of storing the logical entity IDs in system memory. However, one of ordinary skill would readily recognize that it would not be out of the scope of the *AAPA-McBrearty* system to store the logical entity IDs in a separate database. Doing so would further add flexibility to the system.

20. As per claims 25 and 30, *AAPA* in combination with *McBrearty* teaches the means for creating a copy of the logical entity on the second physical storage locations; means for moving all reads of the logical entity from each of the first physical storage to the second physical storage location; and means for moving all writes to the logical entity to the second physical storage location, after all of the reads have been moved to the second physical storage location.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tammara Peyton whose telephone number is (703) 306-5508. The examiner can normally be reached between 6:30 - 4:00 from Monday to Friday.

Art Unit: 2182

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey A. Gaffin, can be reached on (703) 308-3301. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3718.

Any inquiry of a general nature of relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Mailed responses to this action should be sent to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231.

Faxes for Official/formal communications intended for entry should be sent to:

(703) 746-7238, After Final (703)746-7239

or, for informal or draft communications, to:

(703) 746-7240 (please label "PROPOSED" or "DRAFT").

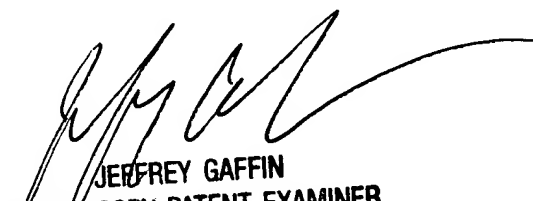
Hand-delivered responses should be brought to:

Crystal Park II, 2121 Crystal Drive, Arlington, VA, Fourth Floor

(Receptionist).

Tammara Peyton

March 7, 2003



JEFFREY GAFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100